

Electrolysis by a Pair of Plates 179

before (51, 52) with regard to the iodide of potassium, namely, that bodies would differ in facility of decomposition by a given electric current,, according to the condition and intensity of their ordinary chemical affinities. This reason appeared in their *reaction upon the affinities* tending to cause the current; and it appeared probable that many substances might be found which could be decomposed by the current of a single pair of zinc and platina plates immersed in dilute sulphuric acid, although water resisted its action. I soon found this to be the case, and as the experiments offer new and beautiful proofs of the direct relation and opposition of the chemical affinities concerned in producing and in resisting the stream of electricity, I shall briefly describe them.

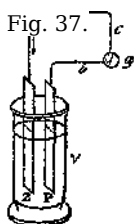
634. The arrangement of the apparatus was as in fig. 37. The vessel *v* contained dilute sulphuric acid; *Z* and *P* are the zinc

and platina plates; *a*, *b*, and *c* are platina wires; the decompositions were effected at *x*, and occasionally, indeed generally, a galvanometer was introduced into the circuit at *g*: its place only is here given, the circle at *g* having no reference to the size of the instrument. Various arrangements were made at *x*, according to the kind of decomposition to be effected. If a drop of liquid was to be acted upon, the two ends were merely dipped into it; if a solution contained in the pores of paper was to be decomposed, one of the extremities was connected with a platina plate supporting the paper, whilst the other extremity rested on the paper, <?, fig. 44: or sometimes, as with sulphate of soda, a plate of platina sustained two portions of paper, one of the ends of the wires resting upon each piece, *c*, fig. 46. The darts represent the direction of the electric current (403).

635. Solution of *iodide of potassium*, in moistened paper, being placed at the interruption of the circuit at *x*, was readily decomposed. Iodine was evolved at the *anode*, and alkali at the *cathode*, of the decomposing body.

636. *Protochloride of tin*, when fused and placed at *x*, was also readily decomposed, yielding perchloride of tin at the *anode* (514), and tin at the *cathode*.

637. Fused chloride of silver, placed at *x*, was also easily decomposed; chlorine was evolved at the



anode, and brilliant
metallic silver, either in films upon the surface of
the liquid, or
in crystals beneath, evolved at the *cathode*.